

# Claims

1. An intelligent roaming method for enabling a mobile station to select a preferred neutral service provider from a plurality of service providers within a communication system, the method comprising the steps of:

5 identifying a current communication system servicing a geographic area where the mobile station is presently located;

determining that the current communication system is not serviced by a home service provider responsive to the step of identifying the current communication system;

10 determining that the current communication system is not serviced by a preferred service provider responsive to the step of identifying the current communication system;

determining that a frequency band of the current communication system corresponds to a predetermined frequency band of frequency bands listed in a system access list (SAL) stored in the mobile station responsive to the steps of determining that the current communication system is not serviced by the home service provider and the preferred service provider; and

15 selecting the current communication system as the preferred neutral service provider only when the frequency band of the current communication system corresponds to the predetermined frequency band of frequency bands listed in the SAL to permit the mobile station to obtain full service from the current communication system.

20 2. The intelligent roaming method according to claim 1 wherein the predetermined frequency band further comprises a first frequency band of the frequency bands listed in priority order in the SAL.

3. The intelligent roaming method according to claim 1 further comprising the steps of:

25 determining that a frequency band of the current communication system does not correspond to the predetermined frequency band of frequency bands listed in the SAL stored in the mobile station responsive to the steps of determining that the current communication system is not serviced by the home service provider and the preferred service provider; and

30 selecting the current communication system as a foreign service provider responsive to the step of determining that the frequency band of the current communication system does not correspond to the predetermined frequency band of frequency bands listed in the SAL to permit the mobile station to obtain emergency service from the current communication system.

4. The intelligent roaming method according to claim 1 further comprising the steps of:  
determining that the mobile station is programmed for full service priority responsive to the steps of determining that the current communication system is not serviced by the home service provider and the preferred service provider,

5 wherein the mobile station selects the current communication system as the preferred neutral service provider only when the frequency band of the current communication system corresponds to the predetermined frequency band of frequency bands listed in the SAL responsive to the step of determining that the mobile station is programmed for full service priority.

10 5. The intelligent roaming method according to claim 1 further comprising the steps of:  
determining that the mobile station is not programmed for full service priority responsive to the steps of determining that the current communication system is not serviced by the home service provider and the preferred service provider; and

15 selecting the current communication system as a neutral service provider responsive to the step of determining that the mobile station is not programmed for full service priority to permit the mobile station to obtain limited service from the current communication system.

6. The intelligent roaming method according to claim 1 wherein the step of identifying the current communication system further comprising the steps of:

20 scanning a frequency band;  
locating a control channel responsive to the step of scanning; and  
receiving system information of the current communication system responsive to the step of locating the control channel.

25 7. The intelligent roaming method according to claim 1 wherein the step of determining that the current communication system is not serviced by a home service provider further comprising the steps of:

comparing system information of the current communication system to system information of the home service provider stored in the SAL; and

30 determining that the system information of the current communication system does not match the system information of the home service provider stored in the SAL responsive to the step of comparing.

8. The intelligent roaming method according to claim 1 wherein the step of determining that the current communication system is not serviced by a preferred service provider further comprising the steps of:

comparing system information of the current communication system to system information of preferred service providers stored in the SAL; and

determining that the system information of the current communication system does not match the system information of the preferred service providers stored in the SAL responsive to the step of comparing.

9. The intelligent roaming method according to claim 1 wherein the step of determining that the frequency band of the current communication system corresponds to the predetermined frequency band of frequency bands listed in the SAL further comprising the steps of:

comparing the frequency band of the current communication system to the frequency bands listed in the SAL; and

determining that the frequency band of the current communication system corresponds to the predetermined frequency band of frequency bands listed in the SAL responsive to the step of comparing.

10. An intelligent roaming method for enabling a mobile station to select a preferred neutral service provider from a plurality of service providers within a communication system, the method comprising the steps of:

scanning a frequency band;

5 locating a control channel responsive to the step of scanning;

receiving system information of the current communication system servicing a geographic area where the mobile station is presently located responsive to the step of locating the control channel to identify the current communication system;

comparing the system information of the current communication system to system

10 information of a home service provider stored in a system access list (SAL) stored in the mobile station responsive to the step of receiving the system information of the current communication system;

determining that the system information of the current communication system does not match the system information of the home service provider stored in the SAL responsive to the step of

15 comparing the system information of the current communication system to the system information of the home service provider to determine that the current communication system is not service by the home service provider;

comparing the system information of the current communication system to system information of preferred service providers stored in the SAL responsive to the step of receiving the system information of the current communication system;

20 determining that the system information of the current communication system does not match the system information of the preferred service providers stored in the SAL responsive to the step of comparing the system information of the current communication system to the system information of preferred service providers stored in the SAL to determine that the current communication system is not serviced by a preferred service provider;

comparing the frequency band of the current communication system to frequency bands listed in the SAL responsive to the steps of determining that the system information of the current communication system does not match the system information of the home service provider and the preferred service providers stored in the SAL;

30 determining that the frequency band of the current communication system corresponds to a predetermined frequency band of the frequency bands listed in the SAL responsive to the step of

comparing the frequency band of the current communication system to the frequency bands listed in the SAL; and

selecting the current communication system as the preferred neutral service provider only when the frequency band of the current communication system corresponds to predetermined

5 frequency band of the frequency bands listed in the SAL to permit the mobile station to obtain full service from the current communication system.

10 11. The intelligent roaming method according to claim 10 wherein the predetermined frequency band further comprises a first frequency band of the frequency bands listed in priority order in the SAL.

12. The intelligent roaming method according to claim 10 further comprising the steps of:  
determining that the frequency band of the current communication system does not  
15 correspond to the predetermined frequency band of the frequency bands listed in the SAL responsive to the step of comparing the frequency band of the current communication system to the frequency bands listed in the SAL; and

20 selecting the current communication system as a foreign service provider responsive to the step of determining that the frequency band of the current communication system does not correspond to the predetermined frequency band of the frequency bands listed in the SAL to permit the mobile station to obtain emergency service from the current communication system.

25 13. The intelligent roaming method according to claim 10 further comprising the step of:  
determining that the mobile station is programmed for full service priority responsive to the steps of determining that the system information of the current communication system does not match the system information of the home service provider and the preferred service providers stored in the SAL,

wherein the mobile station selects the current communication system as the preferred neutral service provider responsive to the step of determining that the mobile station is programmed for full service priority.

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14. The intelligent roaming method according to claim 10 further comprising the steps of:

determining that the mobile station is not programmed for full service priority responsive to the steps of determining that the system information of the current communication system does not match the system information of the home service provider and the preferred service providers

5 stored in the SAL; and

selecting the current communication system as a neutral service provider responsive to the step of determining that the mobile station is not programmed for full service priority to permit the mobile station to obtain limited service from the current communication system.

15. An intelligent roaming method for enabling a mobile station to select a preferred neutral service provider from a plurality of service providers within a communication system, the method comprising the steps of:

identifying a current communication system servicing a geographic area where the mobile station is presently located;

determining that the current communication system is not serviced by a home service provider responsive to the step of identifying the current communication system;

determining that the current communication system is not serviced by a preferred service provider responsive to the step of identifying the current communication system;

determining that the mobile station is programmed for full service priority responsive to the steps of determining that the current communication system is not serviced by the home service provider and the preferred service provider;

determining that a frequency band of the current communication system corresponds to a predetermined frequency band of frequency bands listed in a system access list (SAL) stored in the mobile station responsive to the step of determining that the mobile station is programmed for full service priority; and

selecting the current communication system as the preferred neutral service provider only when the frequency band of the current communication system corresponds to the predetermined frequency band of the frequency bands listed in the SAL to permit the mobile station to obtain full service from the current communication system.

16. The intelligent roaming method according to claim 15 wherein the predetermined frequency band further comprises a first frequency band of the frequency bands listed in priority order in the SAL.

17. The intelligent roaming method according to claim 15 further comprising the steps of:

determining that a frequency band of the current communication system does not correspond to the predetermined frequency band of the frequency bands listed in the SAL stored in the mobile station responsive to the step of determining that the mobile station is programmed for full service priority; and

selecting the current communication system as a foreign service provider responsive to the step of determining that the frequency band of the current communication system does not

correspond to the predetermined frequency band of the frequency bands listed in the SAL to permit the mobile station to obtain emergency service from the current communication system..

18. The intelligent roaming method according to claim 15 further comprising the steps of:

determining that the mobile station is not programmed for full service priority responsive to the step of determining that the current communication system is not serviced by the preferred service provider; and

selecting the current communication system as a neutral service provider responsive to the step of determining that the mobile station is not programmed for full service priority to permit the mobile station to obtain limited service from the current communication system.

19. The intelligent roaming method according to claim 15 wherein the step of identifying the current communication system further comprising the steps of:

scanning a frequency band;

locating a control channel responsive to the step of scanning; and

receiving system information of the current communication system responsive to the step of locating the control channel.

20. The intelligent roaming method according to claim 15 wherein the step of determining that the current communication system is not serviced by a home service provider further comprising the steps of:

comparing system information of the current communication system to system information of the home service provider stored in the SAL; and

determining that the system information of the current communication system does not match the system information of the home service provider stored in the SAL responsive to the step of comparing.

21. The intelligent roaming method according to claim 15 wherein the step of determining that the current communication system is not serviced by a preferred service provider further comprising the steps of:

comparing system information of the current communication system to system information of preferred service providers stored in the SAL; and



determining that the system information of the current communication system does not match the system information of the preferred service providers stored in the SAL responsive to the step of comparing.

- 5    22.    The intelligent roaming method according to claim 15 wherein the step of determining that the frequency band of the current communication system corresponds to the predetermined frequency band listed in the SAL further comprising the steps of:

          comparing the frequency band of the current communication system to frequency bands listed in priority order in the SAL; and

- 10        determining that the frequency band of the current communication system corresponds to the predetermined frequency band of the frequency bands listed in the SAL responsive to the step of comparing.

23. An article adapted to be carried by a mobile station, the article adapted to store an intelligent roaming method for performing steps for enabling the mobile station to select a preferred neutral service provider from a plurality of service providers within a communication system, the article comprising:

5 a computer-readable data storage medium;

means recorded on the computer-readable data storage medium for performing a step of identifying a current communication system servicing a geographic area where the mobile station is presently located;

10 means recorded on the computer-readable data storage medium for performing a step of determining that the current communication system is not serviced by a home service provider responsive to the step of identifying the current communication system;

means recorded on the computer-readable data storage medium for performing a step of determining that the current communication system is not serviced by a preferred service provider responsive to the step of identifying the current communication system; and

15 means recorded on the computer-readable data storage medium for performing a step of determining that a frequency band of the current communication system corresponds to a predetermined frequency band of frequency bands listed in a system access list (SAL) stored in the mobile station responsive to the steps of determining that the current communication system is not serviced by the home service provider and the preferred service provider; and

20 means recorded on the computer-readable data storage medium for performing a step of selecting the current communication system as the preferred neutral service provider only when the frequency band of the current communication system corresponds to the predetermined frequency band of frequency bands listed in the SAL to permit the mobile station to obtain full service from the current communication system.

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24. A mobile station adapted to store an intelligent roaming method for performing steps for enabling the mobile station to select a preferred neutral service provider from a plurality of service providers within a communication system, the mobile station comprising:

an antenna;

a transceiver electrically coupled to the antenna;

a control system electrically coupled to the transceiver; and

a computer-readable data storage medium electrically coupled to the control system;

means recorded on the computer-readable data storage medium for performing a step of identifying a current communication system servicing a geographic area where the mobile station is presently located;

means recorded on the computer-readable data storage medium for performing a step of determining that the current communication system is not serviced by a home service provider responsive to the step of identifying the current communication system;

means recorded on the computer-readable data storage medium for performing a step of determining that the current communication system is not serviced by a preferred service provider responsive to the step of identifying the current communication system; and

means recorded on the computer-readable data storage medium for performing a step of determining that a frequency band of the current communication system corresponds to a predetermined frequency band of frequency bands listed in a system access list (SAL) stored in the mobile station responsive to the steps of determining that the current communication system is not serviced by the home service provider and the preferred service provider; and

means recorded on the computer-readable data storage medium for performing a step of selecting the current communication system as the preferred neutral service provider only when the frequency band of the current communication system corresponds to the predetermined frequency band of frequency bands listed in the SAL to permit the mobile station to obtain full service from the current communication system.